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Notes on Alabama Plants.

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TALINUM.

Dr. Charles Mohr in the Systematic Catalogue of his principal work, the Plant Life of Alabama, which appeared in 1901 as Vol. VI., Contributions from the U. S. National Herbarium, includes *Talinum teretifolium* Pursh as a member of the Alabama Flora. He mentions[1] four counties where the species is definitely known to have been discovered, and indicates its restricted distribution there with the remark "not frequent, local." The counties mentioned lie in two distant sections of the State; the one in the central part of Northern Alabama, the other in the Eastern central part of the State. Three of the four counties, which are adjoining, are located in the former section, viz., Walker, Blount, and Cullman. Special localities are given for Walker and Blount Counties, none for Cullman. In the other section, a single station, Baldrock in Clay County, is mentioned. The elevation of this last being specified as 2200 feet, against 800 for Cullman and 1000 for Blount County.

For the present it is not my purpose to discuss the identity of the plants for the State in general with *Talinum teretifolium* Pursh as I have not had an opportunity of examining specimens from the several localities preserved in the herbarium of the Geological Survey of Alabama. I cannot, however, wholly refrain from touching on the matter in so far as Cullman County is concerned, for I have discovered a species distinct from the *Talinum teretifolium* Pursh though closely related to it. Unfortunately Mohr does not specify a definite locality for Cullman County. The statement of altitude, however, is of some value, for it shows that crests of higher elevation were not the station or stations where the plant was discovered, but that he refers only to the approximate level of that table land which is about 800 feet above sea level.

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[1] l. c. p. 496. 1901.

A second remark of Mohr has an indirect bearing on the question, and seems to support the suspicion that the plant reported from this part of the State is perhaps identical with the *Talinum* of my own discovery, and that it was confounded with Pursh's *Talinum teretifolium.* He credits the discovery of the plant in this locality to the Misses Emily and Mary Mohr. Now these ladies lived in the central part of the county, a mile or so distant from Cullman, and close to the Little River (Eight Mile Creek) where it flows through the premises of St. Bernard College. Not very far east of the College grounds, the banks of the stream,—'river' is a misnomer,—become cliffy, the place being commonly known as "The Cliffs." It is from this station that I secured my plants, and, in my mind, there is little doubt that it is likewise the place where the Misses Mohr made their discovery.

That the plant from this locality might have passed without critical examination as *Talinum teretifolium* is not very surprising; first, because this was considered the only species in the North, as well as in the South Eastern States; secondly, because of the short diagnosis which was considered sufficient by the earlier authors. Pursh's[1] classical diagnosis, "*T. foliis cylindricis carnosis, corymbis terminalibus pedunculatis,*" is such that it applies equally well to any species with terete leaves and a terminal peduncled inflorescence, here termed a corymb, but in reality a cyme.

In Chapman's Flora, formerly the leading manual for the South, no character is mentioned which would be of any use in the present case. In Gray's well known Manual of Botany[2] of the Northern United States, mention is made of one character which proves of value in point of comparison, viz., the varying number of stamens in the species *Talinum teretifolium,* limiting them from 15-20. This limiting of the number of stamens is in strong contrast with that found in the plant which I have discovered in Cullman County, in which the minimum is above forty. This difference, it seems should have aroused suspicion regarding the identity of the plant with *T. teretifolium* Pursh. Too much emphasis, however, must not be laid upon this point, for every practical taxonomist knows that the first statement about a limit, in case of variable characters, is not necessarily very reliable, and, not infrequently, must be accepted with caution. Such a character, however, may become very valuable in the course of time if it proves constant under further observation.

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[1] Pursh Fl. Am. Sept. 2; 365. 1814.

[2] A. Gray Man., 5th ed. p. 98.

Robinson and Fernald's Gray's New Manual confirms the constancy of the limit as stated in Gray's older manual. The same limit—15-20—is mentioned in Small's Flora of the South Eastern United States,[4] but with the restricting remark "usually." It is not clear whether this "usually" refers to an occasionally lower or higher number, but the former seems more probable when we refer to the key, which reads, "stamens less than 25." In Britton's works, the Manual of the Flora of the Northern States,[5] and the Illustrated Flora, the limit is extended both ways, viz., 10-30, against Gray's 15-20. Another good character is mentioned in these works, viz., the length of the style as compared with that of the stamens. This character with that regarding the number of stamens unquestionably makes the plant from the Cliffs on the Little River in Cullman County a species distinct from *Talinum teretifolium* Pursh.

The species is easily recognized by: stamens more than 40; style protruding beyond the stamens about as much as their respective length; petals 9-13 mm. long. It becomes then

Talinum Mengesii, spec. nov.

Type specimen in Herbarium St. Bernard College, no. 1668.

Plant succulent, glabrous, 2-4 dm. tall, perennial by a short horizontal rootstock which is sometimes branched, or. the innovations arise from a very short vertical caudex; roots slender, fibrous, Stems tufted, generally few or single, 3-10, or rarely up to 15 cm. high, unbranched for almost the whole length, the one to five branches arising from near the top just below the base of the long wiry peduncle by which the stem is terminated. The branches, from a few to 10 cm. long, are often branched again at their ends from below the secondary peduncles, but these secondary branches generally do not develope beyond the phase of fascicled leaves, in other cases, however, grow to normal size and terminate into peduncles. The leaves are quite numerous but not crowded on the stem and branches, terete, 2-5.5 cm. long, 1.5-3 mm. thick, not dilated at the base, the backward prolongation less than 1 mm. long, the apex bluntly pointed. The scape-like peduncles are slender but stiff and wiry, 7-20 m. long; the cyme is open and only occasionally corymbosely branched, but as a rule is umbellate, having generally three branches, which are from a few to 12 cm. long and radiate from below the central flower; the bracts are hardly 2 mm. long, inclusive of the posterior prolongation and are lanceolate-ovate; the pedicels are clavate and 5-10 mm. long. The sepals are 3, 5-4 mm. long about one third as long as the petals, ovate, obtusish. The corolla is rose-purple; the petals are mainly obovate, mucronulate, 9-13 mm. long, closing again after spreading for one day or some hours, withering, and at length, like the sepals, deciduous. Stamens 45-100, or occasionally a few more, but most commonly 50-80; filaments distinct, not adnate to the base of the petals, purple; anthers golden yellow. Style distinctly excerted beyond the stamens about as much as their own average length. Capsule 3-4 mm. high, subglobuse, angled at the sutures, 3-, or sometimes, 4- valved. Seeds 1 mm. wide, black, almost smooth, and slightly shining.

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[4] Small's Fl. S. E. U. S. p. 440. 1903.

[5] Brit's. Man. N. U. S. & C. p. 385. 1905.

The plant in this station has little chance of holding its place in the far future which it once occupied in the past, namely, on the cliff bank of the Little River. The inhabited locality is already broken up into separated patches, the plant being now replaced by various species which were unable to adapt themselves to the formerly prevailing conditions. *Talinum Mengesii* is a plant content with a scant accumulation of soil on the exposed naked surface of the rock, sometimes establishing itself in such small quantities of soil that it cannot produce a proper rootstock for the first time because of insufficient protection. The accumulating soil is rich in organic matter, but I have seen plants flourishing equally well in pure sand, in a somewhat lower situation about an abandoned stone crushing mill. The plant frequently roots between the decomposing bases of xerophile bryophytes of an upright habit, which form patches on the rocks, from a hand's space to a few square feet, and offer a good protection for the plant's rootstock. In such situations the plant grows with practically no soil. But even in cases of a more upbuilt soil, this is rarely more than 1 cm. deep. Not so content is the plant in as far as light is concerned, for it is dependent on bright open sunshine, and this, under the circumstances of advanced soil conditions is its misfortune in the resulting competition. When the soil is about one cm. deep, sooner or later, accommodation of flowering plants other than *Talinum Mengesii* sets in. The first one which associates with this species is *Alsinopsis glabra* Small (*Alsine glabra* Michx.), yet, at least for the first, without interfering with the flourishing of the *Talinum Mengesii*. Because the former plant is a slender open branched, wiry, and rather short living annual with but a few small leaves, no serious overshading or crowding is effected, and thus both species tolerate one another very well. Yet the appearance of this species is a sign that the time is near at hand when *T. Mengesii* is doomed to give up its habitat. By and by other species, well fitted to form a closer plant association in a still scanty soil, begin to establish themselves with *Talinum Mengesii* and *Alsinopsis glabra*. Among the first of these are *Crotonopsis linearis* Michx., *Sarothra gentianoides* L., *Polygala Curtissii* A. Gray, *Allium microscordion* Small, etc. These are all sun loving plants, but unlike *Talinum Mengesii*, they maintain themselves well in the grassy swales which now establish themselves on the formerly barren rock, whence that species in this time of progression has already been outcrowded.

ARUNDINARIA TECTA (WALT) MUHL.

It is rather universally known that *Arundinaria tecta* like the other North American species *A. macrosperma* Michx. does not as rule flower each succeeding year, but remains sterile for longer or shorter periods, generally producing flowers only at intervals of several or even many years. However, such a uniform conception does not prevail in regard to the arrangement of the inflorescence on the plant, i. e.,—that part of the plant upon which the flowers are borne. The interpretation of the leading manuals of the Eastern flora is responsible for this difference of opinion on the character in question. This is to be regretted the more since it is a case in which the majority of botanists are unable to obtain first hand information through actual observation because of the two factors, namely; the sterility and the restricted habitat of the plant.

Curiously enough the uncertainty arises in the diagnosis found in the descriptions of *Arundinaria tecta* given by the authors of the newer manuals, viz.—Gray's New Manual, Britton's Manual of the Flora of the U. S., and Small's Flora of South-Eastern U. S., while in the older manuals, viz.—Gray's Manual, and Chapman's Flora, the diagnosis of the point in question is far more complete.

For clearness sake let me give an example: In the fifth edition of Gray's own work, Manual of Botany,[1] that part of the description which relates to the inflorescence reads, "spikelets solitary or in a simple raceme at the summit of the branches or frequently on leafless radical culms." At the end of this text we find the word "*Chapman*" and from this we learn that the foregoing statement is not based on Gray's own observations, but that it is accredited to the authority of Chapman. Thus it might seem that the citation of the diagnosis should have been more justly quoted from Chapman's own work, but let me emphasize the fact that Gray himself is not guilty of the violation attributable to the recent authors whose work sails somewhat under the protection of Gray's authority, since his name is associated with the title of the book. The wording in Chapman's original work, The Flora of the Southern United States,[2] is literally the same and needs no repetition.

Upon Chapman's authentical and precise diagnosis we must assume that the flowers may appear on both parts of the plant, namely, on the branches of the leafy culms and on the distinct radical culms. The text in Robinson and Fernald's Gray's New Manual[3] reads, "panicles of few spikelets on long slender branches." The wording differs from that of the old Manual but it does not interfere in our case, for only the words "on branches" relate to the point in question. A comparison with Chapman's text, as adopted by Gray in his own publication, shows that only a part of the diagnosis has been retained by the authors of the New Manual, i. e., that the inflorescence is borne on the branches. The part relating to the radical culms is entirely discarded.

Consulting leading manuals of another school, we find a statement contrary to the one found in "Gray's New Manual." This, however, is a part of Chapman's diagnosis, the very part which the authors of Gray's New Manual have rejected. The works referred to are, "Britton's Manual of the Flora of the Northern United States and Canada" and Small's "Flora of the Southeastern United States." In Britton's Manual[4] the text reads, "racemes on short leafless culms;" in Small's Flora,[5] "inflorescence borne on short leafless stems."

Thus it is obvious that neither in the so called Gray's New Manual nor in the other two works, Britton's Manual and Small's

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[1] l. c. p. 98.

[2] l. c. p. 561. 1882.

[3] l. c. p. 171. 1908.

[4] l. c. p. 158. 1905.

[5] l. c. p. 161. 1903.

Flora is a character found which is not included in Chapman's diagnosis, and to which Asa Gray faithfully adhered in the publication of his own Manual. This only is new and strange, viz., that Chapman's diagnosis has been divided. The authors of the one school made part of his statement their own, while those of the other school were content with the rest of it.

This violation of Chapman's diagnosis becomes more pronounced from the fact that in Britton's Manual,[1] and also in Small's Flora,[2] the retained part is made use of as a specific distinction in connection with the size of the plant, for the key presented with the genus Arundinaria reads:

> "Spikelets borne on radical shoots of the year; culms 4 m. tall or less, —1 A. tecta.
>
> Spikelets borne on the old stems; culms 5 m. tall or more,—2 A. macrosperma."

The above citation is from Britton's work and is identical with that found in Small's Flora in regard to *A. tecta*, and almost the same in regard to *A. macrosperma*. But Chapman's full text on this part is; "frequently on leafless radical culms." Now, it is logically not the same to simply state "on radical shoots" in place of "frequently on . . . radical culms." The rejection of the word "frequently" becomes almost a necessity in order to make the character a specific distinction.

Now, although the authors of these recent manuals (Hitchcock is credited with having elaborated the *Gramineæ* in Gray's New Manual, Nash, this same family in Small's Flora) have reached conclusions which led to the discarding of a part of Chapman's diagnosis as a result of actual observations or, examination of herbarium material, this does not justify their rejection of either of the two characters for the very reason that the species is an exceptionally rare object of observation in the flowering state. Furthermore the observation of only one phase is no absolute proof against the other. The contradiction resulting from the method used by these authors is plainly evident, for the author in the New Manual tells that the flowers appear on the branches; while the authors of Britton's Manual and Small's Flora state on the contrary that the flowers are borne on radical shoots. It was the duty of these authors to retain both diagnostic characters and place the responsibility on Chapman, a botanist of sufficient ability to make correct observations on such conspicuous characters. In case this should not have satisfied the authors, they could have expressed their doubt in the customary way by placing a question mark after Chapman's statement.

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[1] l. c. p. 158. 1905.

[2] l. c. p. 161. 1903.

To do justice to Dr. Chapman, in bringing his diagnosis to the test, the results of my own observations are herewith presented. The following short statement is based on observations of the species *Arundinaria tecta* Muhl, and is not, as it might seem, a compilation of the characters of both species, *A. tecta and A. macrosperma.*

The following facts are obtained by observations and collections of plants from a locality where, I am certain, *A. macrosperma* does not occur, namely, about St. Bernard, Cullman County, Northern Alabama. Mohr in his Plant Life of Alabama[1] expressly excludes the table lands in his report on the habitat of *A. tecta* ,but this report is superseded, at least in part, by later discoveries.

According to my observations the inflorescence on *Arundinaria tecta* Muhl is borne on the so called leafless radical culms (2-9 dm. high) of the season and with sheaths terminated by minute blades: on leafly radical culms of the season with blades somewhat dissimilar in size and appearance from those of the vegetative culms, 10 cm.; or less long and 1 cm. or less wide: on radical culms of the season with blades rather similar to those of the vegetative culms; culms and leaf blades of moderate size: on the summit of leafly branched and unbranched culms of the season, similar to the vegetative culms in size and appearance: on the summit of the culm and the end of the branches of leafly branched culms of the season, and of the same habit as moderately branched vegetative culms. Occasionally branched culms of the preceding season were found with profuse flowering branches, which arose from the crowded sheaths of the ultimate branches of the previous year. The leaves in these cases had fallen during the winter.

Spikelets 6.5 cm. long, and also spikelets up to 15-flowered have been observed. (Herb. St. Bernard College, Nos. 445 and 446.)

St. Bernard College,
St. Bernard, Ala.

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[1] Pl. L. of Ala. Contrib. U. S. Nat. Herb. 6:389. 1901.